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EKPC Request 1  
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**ICF RESOURCES, LLC.**

THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR A  
CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE  
CONSTRUCTION OF A 161 kV ELECTRIC DISTRIBUTION SUBSTATION AND TAP IN  
SPENCER COUNTY, KENTUCKY

**PSC CASE NO. 2004-00320**

**RESPONSE TO APPLICANT DATA REQUEST No. 1 Received on February 18,  
2005.**

**ITEM 1**

**RESPONSIBLE PARTY:** Kojo Ofori-Atta

- ITEM 1:**
- a. Is the consultant's conclusions that the "... Taylorsville substation would not need an upgrade until well beyond 2008..." based on the winter rating and projected winter loading of the substation or on the summer rating and projected summer loading on the substation?
  - b. What is the consultant's understanding as to what the summer rating is of the Taylorsville transformer serving the Little Mount feeder?
  - c. What is the consultant's understanding as to what the projected summer loading of that transformer will be through 2008?
  - d. It is the Applicant's conclusion that overloading of this transformer occurs in the summer of 2006. What is the consultant's conclusion as to when summer overloading of this transformer will occur?
  - e. Please provide an analysis of the projected summer loading on this transformer similar to the analysis contained in the TA of projected winter loading.

**RESPONSE:**

Based on this simplified illustration and assumptions that future monthly peak loading

will follow the historical 2004 monthly peak load pattern, the Taylorsville substation should be able to accommodate additional loading especially during the winter season. With a winter rating of 18.1 MVA and a winter projected load of 16.3 MW (approximately 18.1 MVA assuming 90% power factor) the Taylorsville substation should be able to accommodate projected winter loading through 2008.

However, since the summer rating of the Taylorsville substation is 13.6 kVA and much lower than the winter rating, the substation could experience summer overloads earlier than 2008. From EKPC's projections on summer loading, the Taylorsville substation could reach its summer limit as early as 2006.

All these projections are predicated on the assumption that no new system reinforcements are done and Taylorsville continues to serve the Little Mount area. If a new bulk power distribution substation is built for the Little Mount area, then the Taylorsville substation would not need an upgrade until well beyond 2008 based on assumptions on demand growth.

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**ITEM 2**

**RESPONSIBLE PARTY:** Kojo Ofori-Atta

**ITEM 2:** Please refer to the first sentence of the second paragraph on page 24 of the TA, where the consultant states that, "The supply security in the period before the construction of the substation will be reasonably good since it will also be a looped system with the potential to feed power from either side of the loop in the event of an unplanned outage." The construction of an express feeder out of the Darwin Thomas substation into the Little Mount area would, in fact, provide a second physical pathway for service into the area. However, due to the existing overload conditions on the Taylorsville feeder, especially during peak loading, would this constitute a reliable option for backfeed into the area so as to constitute a true looped system under all loading conditions? Please provide an explanation and analysis of the factors and reasoning for this conclusion.

**RESPONSE:**

Please refer to page 20, paragraph 3, line 13 of the Technical Appraisal:

*"Demands between 1.5 MVA and 8 MVA should at a minimum be on an open ring circuit with a maximum restoration time of 2 hours. Demands of between 8 MVA and 40 MVA must have alternative supplies with a maximum restoration time of 15 minutes. Demands in excess of 40 MVA require firm supplies with no supply interruptions for single contingency faults".*

Since the Little Mount winter peak demand is projected by EKPC to be 7.1 MW in 2004-05 increasing to 8.8 MW in 2009/2010, ICF is of the opinion that *firm* supplies with no supply interruptions for single contingency faults for the Little Mount area would probably be costly.

However, maintaining alternative supplies with a maximum restoration time of about 15 minutes to two hours is reasonable. Therefore in constructing a new feeder from Darwin Thomas to supply power to the Little Mount area as proposed in EKPC's Alternative G, an unplanned outage of this feeder (which is usually a low probability event) would necessitate alternative supplies from the Taylorsville feeder with some level of load management which we estimate would fall within the 15 minutes and two hour window for full restoration. This analysis is consistent with the statement that *"The supply security in the period before the construction of the substation will be reasonably good since it will also be a looped system with the potential to feed power from either side of the loop in the event of an unplanned outage."*